

## **EXHIBIT C**



**City of New York vs. Amerada Hess Corp., et al.,  
Case No. 04 Civ. 3417**

**EXPERT REPORT OF**

Marcia E. Williams 1/22/09

Marcia E. Williams  
LECG, LLC  
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Suite 2300  
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January 22, 2009

**Expert Report of Marcia E. Williams**  
**January 22, 2009**

**I. Introduction**

My name is Marcia E. Williams and I am a Director at LECG, LLC. My office is located at 2049 Century Park East, Suite 2300, Los Angeles, CA 90067.

I have been retained by Baker Botts on behalf of a group of petroleum companies to offer my opinion on the evolution of the underground storage tank (UST) regulatory program and the manner in which the U.S. Environmental Protection Agency (EPA) develops regulations.<sup>1</sup> My report will address EPA's knowledge about USTs, including USTs storing MtBE-containing gasoline, as a potential source of groundwater contamination and the EPA's actions to ensure protection of human health and the environment. I was also asked to opine on the methodology and conclusions reflected in the December 19, 2008 report of Marcel Moreau. Indeed, I have expressed my opinions in the form of responses to the assertions made by Mr. Moreau.

LECG was compensated at a rate of \$475 per hour for my time in reviewing materials and developing this report. LECG was compensated at a rate of \$105 to \$385 per hour for time spent by colleagues working under my direction.

**II. Qualifications of Marcia E. Williams**

I graduated from Dickinson College, Carlisle, PA with a B.S. in Math and Physics in June 1968, summa cum laude, and was a member of Phi Beta Kappa. A copy of my C.V., with a testimony list covering the last four years, is included as Attachment A.

The following is a list of my published articles:

- *Landfills, Old Remedy with New Challenges*, Forum for Applied Research, University of Tennessee, Spring, 1992.
- *Policy Improvements to Encourage Soil and Groundwater Remediation*, National Academy of Science Groundwater Committee, March, 1988 (chapter in book).

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<sup>1</sup> I understand that the ConocoPhillips Company is represented by Latham & Watkins in this matter. My husband is a partner at Latham & Watkins. He is not involved in Latham & Watkins' representation of the ConocoPhillips Company in this case and I have not discussed any aspects of my work on this case with him.

- *Integrated Municipal Solid Waste Management*, chapter in McGraw Hill book entitled Handbook of Solid Waste Management (1994).
- *Strategies for Managing Present and Future Wastes, Risk Analysis*, 1991, Volume 11.
- *EPA Actions to Stimulate Use of Biotechnology for Pollution Control and Cleanup*, University of Washington, July, 1987 (chapter in book).
- *Rethinking RCRA for the 1990's*, Environmental Law Reporter, article authored with Jonathon Cannon, February, 1992.
- *Why-and How To-Benchmark for Environmental Excellence, Total Quality Environmental Management*/Winter 1992/1993.

Over the last thirty years, I have also given over 50 speeches relating to chemical regulation, waste management, risk assessment and risk management, and the assessment and design of environmental management systems.

Experience at U.S. EPA: From the inception of the EPA in 1970 through February 1988, I was employed at the EPA in various positions and was a charter member of the Senior Executive Service beginning in 1979. Senior management positions, in reverse chronological order, were Director, Office of Solid Waste with national responsibility for the EPA's solid and hazardous waste program; Deputy Assistant Administrator, Office of Pesticides and Toxic Substances; Acting Director and Deputy Director, Office of Toxic Substances; and Division Director, Office of Special Pesticide Review. Earlier positions included Chief, Statistical Evaluation Staff; Special Assignment to the Senate Public Works Committee; and various management and technical positions within the Office of Mobile Source Air Pollution Control and Office of Research and Development.

From 1970 until 1972, I held technical positions in the Office of Research and Development where I developed health effects databases and statistical analysis models and performed data analyses to support the issuance of national ambient air quality standards. From 1972 through 1978, I held various positions in the Office of Mobile Source Air Pollution Control, assuming a Branch Chief position for the last few years. During my tenure in the air program, I was involved with the development of mobile source air pollution emission factors and I participated in the development of the early EPA automotive fuel economy standards. I was also involved in the evaluation of fuel additives and automotive inspection/maintenance programs.

I was then selected to develop a new EPA office, holding the title of Chief, Statistical Evaluation Staff, Office of Planning and Evaluation from March 1978 through April of 1979. In that position, I was responsible for reviewing major EPA regulations including some of EPA's early waste disposal regulations, EPA's regulations on removal of lead from gasoline, key PCB regulations, and many water

regulations and water quality criteria. The review performed by my office considered whether the data and analyses relied upon by the EPA were adequate to support the Agency's regulatory positions. My office played a critical role in EPA's program to implement Executive Order 12044, Improving Government Regulations. I also provided statistical consulting support to EPA program offices on specific projects. Additionally, I participated in the early development of EPA risk assessment and risk management methodologies.

I next served as Director, Special Pesticide Review Division, through January of 1981. My office was responsible for re-registering currently registered pesticides based on obtaining and reviewing a complete data set of health and environmental information. My office also reviewed and took appropriate regulatory action on pesticides whose use created unreasonable risk.

Commencing in January 1981, I was Deputy Director and then Acting Director, Office of Toxic Substances (OTS) through December of 1983. In these positions, I oversaw the day-to-day administration of the EPA's chemical review and control programs for both new chemicals and existing chemicals. The control program for chemicals already in use included the development of regulations to collect existing data on specific chemicals, test rules to fill data gaps, analysis and prioritization of chemicals of concern, and regulation of chemicals as necessary to control unreasonable risks to health or the environment. Some of the chemicals actively evaluated and regulated during my tenure involved solvents, dioxins, and PCBs. As envisioned by Congress, this program was highly integrated with other EPA offices to ensure that the Toxic Substances Control Act (TSCA) was used to facilitate data collection needed by other EPA offices and to fill gaps in other EPA statutory authorities. In my senior OTS management role, I was involved in the development of the EPA's groundwater strategy and I managed OTS's input into that strategy. One of the key roles assigned to OTS between 1980 and 1984 was leadership for the UST program including collection of necessary data to characterize the nature and extent of the UST contribution to the national groundwater problem. Prior to the passage of the Hazardous and Solid Waste Amendments in 1984, the EPA intended to utilize TSCA authorities to address any necessary federal regulation of USTs. During my tenure in OTS, I was also involved with inter-agency coordination on risk assessment with the U.S. Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), and the Consumer Product Safety Commission (CPSC). These four agencies worked as part of the Interagency Regulatory Liaison Group to harmonize approaches to risk assessment. EPA also worked with OSHA, National Institute for Occupational Safety and Health (NIOSH), and FDA on other specific regulatory issues.

In December 1983, I became Deputy Assistant Administrator, Office of Pesticides and Toxic Substances (OPTS). In this position, I continued to review regulatory decisions prepared by OTS and the Office of Pesticide Programs. I also participated in the development of policies for the TSCA and Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) enforcement program. As Deputy Assistant

Administrator, I participated in EPA cross-program policy issues including the development of risk assessment and risk management policies and the Agency's groundwater protection strategy. I also co-chaired the agency's Research Committee on Chemicals and frequently participated in senior management meetings hosted by the EPA Administrator on cross-office policy issues.

Starting in September 1985, I served as Director, Office of Solid Waste (OSW), where I functioned until leaving the Agency in 1988. In my capacity as Director of EPA's OSW, from September 1985 through February 1988, I directed EPA's 250 person, \$40 million program to implement the Resource Conservation and Recovery Act (RCRA) and the 1984 Hazardous and Solid Waste Amendments (HSWA) to RCRA. These Amendments fundamentally restructured and strengthened the Federal hazardous and solid waste management program. During this period, my office developed and issued over 40 proposed and final rules relating to solid and hazardous waste. This included the "land disposal restrictions" regulations, which significantly curtailed the amount, and types, of untreated hazardous waste that could be disposed of in land-based management units such as landfills and surface impoundments. It also included regulations which addressed the proper identification and characterization of waste; the standards for waste generators, transporters, and treatment/storage/disposal facilities; upgraded standards for management of hazardous waste in tanks; the hazardous waste permitting program; and the process for delegating implementation authority for permitting and enforcement to qualified states. The office also provided national leadership and oversight for the permitting program (both operating and post-closure permits) and the corrective action cleanup program at over 5,000 individual sites. Development of the RCRA corrective action program was done in close coordination with the Comprehensive Environmental Responsibility Compensation and Liability Act (CERCLA or Superfund). Development of hazardous waste tank regulations was done in close coordination with the Office of Underground Storage Tanks. This included work on both release prevention and detection methods. In fact, many of the individuals who eventually became the initial core group in the Office of Underground Storage Tanks (OUST) had started working on the EPA's UST regulatory program while they were still part of OSW.

During my tenure as Director, Office of Solid Waste, my office received hundreds of letters each year asking for interpretations and clarifications of the solid and hazardous waste requirements as they applied to various situations. Many of those letters raised questions about waste characterization and recycling. I was involved in reviewing responses to these inquiries and crafting U.S. EPA policy in these areas. I also met with regulated and other interested parties on these matters. In addition, my office developed detailed guidance documents on many of the complex issues covered by the RCRA regulations. The guidance documents provided interested parties with further detail as to how U.S. EPA intended that affected parties implement the regulations.

During my tenure at EPA, I had considerable direct interaction with Congress. In 1976, while employed with EPA, I served a rotation with the Senate Public Works Committee. During this time, Congress was in the process of developing TSCA and RCRA and was debating various aspects of that legislation. It was also engaged in an effort to reauthorize the 1970 Clean Air Act. In my management positions at EPA, I was generally responsible for tracking legislative developments within Congress in order to monitor how new legislation might affect existing EPA programs I was involved with and to provide EPA input on specific legislative issues. In my senior management capacity, I was also responsible for meeting with congressional aides to inform them of the status of the implementation of congressional mandates. These meetings often involved discussions of congressional intent. I testified on numerous occasions before House and Senate committees and subcommittees. In addition to monitoring new legislation, as a senior manager at EPA, I was responsible for ensuring that EPA understood congressional intent so that the agency could effectively promulgate regulatory requirements. Hence, in implementing provisions of FIFRA, TSCA and RCRA at EPA, my office carefully evaluated the objectives of Congress in passing the legislation so that implementation of the law would be consistent with these objectives. Since leaving EPA, I have continued to provide testimony at congressional hearings at the invitation of congressional subcommittees.

Experience at Browning-Ferris Industries: From February 1988 until August 1991, I was the Divisional Vice President - Environmental Policy and Planning for Browning-Ferris Industries, Inc. In that position, I established an environmental regulatory and legislative program for the Company on issues such as hazardous and solid waste compliance, air regulations for solid waste landfills, interstate movement of waste, rate regulation of the waste industry, solid waste planning, disposal fees, UST regulation, and remediation under RCRA, CERCLA, and the UST regulations. I also represented the company at National Solid Waste Management Association meetings where a broad industry group addressed a wide variety of federal and state regulatory issues. Within the company, I was responsible for analyzing and forecasting environmental trends, and for assisting operating managers in resolving environmental conflicts in relation to specific permit hearings, siting decisions, regulatory interpretations, and enforcement actions. I was involved in corporate strategy development related to BFI's implementation response to new regulations and helped identify and evaluate business opportunities such as recycling, composting, remediation, asbestos removal, and tank removal and remediation. I was also Co-Chair of BFI's Environmental Policy Committee and in that capacity worked to enhance the company's environmental management systems.

During 1988 and 1989, I also concurrently held the position of Vice President of Environmental Compliance for CECOS, the company's hazardous waste subsidiary. In that capacity, I addressed numerous issues associated with the proper characterization of solid and hazardous waste, the management of these wastes, the permitting of hazardous waste and TSCA PCB waste sites, and the closure and remediation of sites. In this context, I developed environmental plans for 14

hazardous waste management facilities and evaluated the impacts of new land disposal restriction regulations issued by U.S. EPA on the company's waste market. My staff was responsible for auditing existing hazardous waste facilities, performing due diligence on new acquisitions, obtaining needed facility RCRA and non-RCRA environmental permits, and managing facility cleanup and closure. We also provided technical remediation services on a commercial basis and provided extensive help on waste characterization to CECOS customers.

Consulting Experience: Following my tenure at BFI, I have been a consultant to both private industry and government agencies on a wide range of environmental matters, with a particular focus on compliance with RCRA, CERCLA, CWA, and TSCA, as well as their state equivalent statutes. I have consulted on many projects that require the application of federal and state regulations covering chemical and waste management to case-specific situations, including matters involving federal or state enforcement actions. I have also helped entities develop strategies for addressing remedial obligations.

I have also conducted environmental management projects for a wide variety of industry and government clients (over 100 locations and over 50 projects) with the goal of improving client compliance or risk management systems. These projects involve extensive review of documents, site inspections, and the conduct of large numbers of detailed employee and management interviews. The interviews focus on understanding internal communication flows, business priorities, how environmental and health/safety responsibilities are integrated into operations, environmental budgeting, environmental policies and procedures, and a raft of other issues. My environmental management system projects have addressed environmental, health and safety, process safety management, and transportation topic areas. These projects have also included compliance audits, management system audits, risk and liability audits, and waste vendor audits.

I have also performed consulting in the area of historical evolution of information and regulations and evaluation of whether or not an entity's performance at any specific point in time was reasonable and appropriate in light of knowledge held by government health and environmental entities. These projects involve extensive evaluation of historical documents and fact witness testimony.

In addition to expert consulting, I have provided expert testimony at deposition and at trial. Areas of testimony include: the federal regulatory development process, risk assessment and risk management frameworks applied to environmental decision-making, standard of care, evolution of knowledge with regard to chemical and waste handling activities (including USTs and above ground tanks), environmental management systems, application of federal waste and chemical regulations, and consistency with the National Contingency Plan (NCP). I have provided opinions on RCRA regulatory issues in a large number of expert reports and affidavits and I have testified at trial and at deposition on these issues.

to MtBE and its use as a gasoline additive. Along with the increasing identification of MtBE at low levels in groundwater, these incidents led some states to ban the use of MtBE and today it is not commonly used as a gasoline additive. The discovery of MtBE in the groundwater in places such as Santa Monica and Lake Tahoe occurred after the increase in the use of MtBE under the Clean Air Act and after the promulgation of federal regulations for USTs.

## V. Summary of Opinions

Mr. Moreau states in his report that he was asked to answer four questions:

- How do releases occur from UST systems?
- How effective is leak detection in detecting leaks from USTs, including USTs containing MtBE?
- What was the petroleum industry's knowledge concerning the integrity of UST systems when gasoline with MtBE was being stored? and
- What was the oil industry's knowledge during the 1980s and 1990s regarding MtBE?<sup>2</sup>

But it is clear from reading his report, that Mr. Moreau's real purpose is to paint a historical picture showing that petroleum companies definitively knew that their use of MtBE in gasoline would result in widespread groundwater contamination with risks to health and, despite this knowledge, suppressed or whitewashed this information and foisted the use of MtBE on an unsuspecting public and unsophisticated service station owners.

In my opinion, Mr. Moreau uses 20/20 hindsight and selective facts to tell his story, fails to factually support the insidious intent he ascribes to petroleum companies through any type of weight of evidence analysis, and ignores the overwhelming incentives the industry had to minimize contamination that would occur from releases of MtBE to groundwater. Most significantly, Mr. Moreau describes a world in which the industry appears to have had knowledge regarding USTs and MtBE that was unknown to others and suppressed or "whitewashed" efforts to more widely communicate this information. Mr. Moreau significantly minimizes the fact that public health and environmental officials, including officials at the EPA during the time I worked there, evaluated the issue of leaking USTs, obtained comprehensive information regarding the size and scope of the leaking UST issue, reviewed a broad range of control options for both implementability and protectiveness, and promulgated comprehensive regulations designed to protect human health and the environment. Moreover, at the time the EPA issued these regulations in 1988, the Agency certainly knew that USTs could contain a range of additives, including

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<sup>2</sup> Expert Report of Marcel Moreau, December 19, 2008. p. 3.

MtBE, and understood the nature and characteristics of MtBE, including its potential to be a groundwater contaminant.

Therefore, from at least the mid-1980s, the EPA and other public health officials held the same, if not better, information as petroleum companies regarding the environmental impacts of USTs and MtBE. The EPA also had a Congressional mandate to develop regulations that would protect human health and the environment from leaking USTs supported by a significant budget to conduct the necessary research to promulgate such regulations. The EPA issued these regulations in 1988, prior to the ramp-up in the use of MtBE under the Clean Air Act, while many states, including the State of New York, acted even earlier to issue regulations tailored to the unique circumstances in their states. Mr. Moreau offers little or no evidence that petroleum companies held information regarding leaking USTs and MtBE that was not known by public health and environmental officials, including EPA, when they issued these regulations.

Furthermore, to believe Mr. Moreau's version of history, one has to believe that an industry would knowingly create massive remedial liability for itself and for its primary retail customers. Mr. Moreau contends that the industry knew MtBE was a persistent groundwater contaminant that was difficult and costly to clean up and that the industry also knew there would be "huge quantities" of gasoline containing MtBE released to the groundwater from USTs. But petroleum companies, like all similar industries in the United States, were also acutely aware of the significant liabilities associated with groundwater contamination. In my opinion, it is not feasible or logical that an industry would have such certain knowledge of the contamination MtBE would cause and knowingly impose that liability on itself and on its service station partners.

My specific opinions, for which I provide more detail in the following section of my report, are as follows:

- **Opinion #1:** Mr. Moreau downplays or ignores the fact that federal and state regulatory agencies developed UST regulatory programs prior to the significant increase in MtBE use under the Clean Air Act that were designed and understood to be protective of human health and the environment.
- **Opinion #2:** Mr. Moreau downplays or ignores the fact that the EPA, in developing its UST regulations, had knowledge of MtBE and its use in gasoline, and such knowledge did not change the EPA's determination that the UST regulations would protect human health and the environment.
- **Opinion #3:** Mr. Moreau argues that petroleum companies dramatically increased their usage of MtBE because of Clean Air Act requirements despite knowing that the UST regulations would not adequately prevent MtBE groundwater contamination. Yet, Mr. Moreau ignores the fact that the EPA, including relevant offices responsible for the regulation of

USTs, knew that the use of MtBE would increase under the 1990 Clean Air Act, and still believed the UST regulations were protective.

- **Opinion #4:** Mr. Moreau ignores or downplays the key role played by state agencies in developing and enforcing tailored UST programs. If state government agencies and/or local governments believed that additional regulation was necessary to protect human health or the environment in their jurisdictions as a result of MtBE in gasoline, they had the ability to adopt such additional regulations or tailor enforcement programs.
- **Opinion #5:** Mr. Moreau does not properly consider the fact that federal and state liability laws, both before and after the enactment of the federal UST regulations, provided a strong incentive for petroleum companies to minimize all releases into the environment including releases of MtBE to groundwater.
- **Opinion #6:** Mr. Moreau inaccurately states that throughout the 1980s and into the 1990s, small releases of petroleum product from USTs were of minimal concern to either petroleum companies or the EPA.

In addition to these opinion areas, I also address certain specific statements made by Mr. Moreau in his report.

## VI. Detailed Opinions

### A. **Opinion #1:** Mr. Moreau downplays or ignores the fact that federal and state regulatory agencies developed UST regulatory programs prior to the significant increase in MtBE use under the Clean Air Act that were designed and understood to be protective of human health and the environment.

In Mr. Moreau's report, he states that "*leaks from storage systems have long been recognized by petroleum marketers*" (p. 51) and that furthermore these companies knew that storing MtBE in USTs would result in widespread groundwater contamination, but the industry chose to "whitewash" the issue.<sup>3</sup> While Mr. Moreau makes reference to the federal UST regulations (p. 42) in describing the chronology of the leaking UST issue, he fails to properly put into context that these regulations represented the culmination of a long regulatory process and that those persons or businesses who owned or operated USTs had reason to believe, as EPA clearly did, that these new regulations included standards that were protective of human health and the environment.

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<sup>3</sup> On p. 72 of his report, Mr. Moreau states that: "*The petroleum industry was very well aware that large numbers of underground storage systems were leaking or at risk of leaking when they introduced MtBE as an octane enhancer for gasoline in 1979 and as an oxygenate in the 1990s*" but "*despite this knowledge, oil refiners chose to make MtBE a major constituent of their gasoline.*" He further states that the industry failed to draw attention to the MtBE issue and that "*instead of providing warnings, the industry chose to whitewash the issue.*" (p. 74).

## MARCI A. WILLIAMS

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### PROFESSIONAL EXPERIENCE

#### *CONSULTING EXPERIENCE (1991-Present)*

- LECG, LLC  
Director, March 2001 – Present
- PA CONSULTING GROUP, INC.  
Member of Management Committee, October 2000 – March 2001
- PHB HAGLER BAILLY, INC.  
Sr. Vice President, October 1998 – October 2000
- PUTNAM, HAYES & BARTLETT  
Managing Director, August 1997 – October 1998
- WILLIAMS & VANINO  
Founder and President, 1991-1997

Ms. Williams has extensive experience with the development and application of environmental regulations and with the design and implementation of environmental management programs, which result in the effective integration of environmental objectives into organizational business strategies, performance goals and culture. She has managed projects ranging in size from \$50,000 US to \$2,500,000 US. Her practice focuses on the following four areas:

#### **Regulatory Expert and Litigation Support**

Ms. Williams has served as a consulting and testifying expert in the areas of solid and hazardous waste regulations and practices, chemical and pesticide regulation, regulatory risk management, the regulatory process, the historical evolution of environmental knowledge and regulations, and environmental management systems. Cases have involved insurance recovery (fortuity issues and reasonableness of cleanup remedies), private-party cost recovery for environmental cleanup costs, toxic tort litigation, criminal and civil enforcement actions, contract disputes, SEC disclosure litigation, and NAFTA claims. A listing of testimony is provided. Ms. Williams has also been engaged in over 25 additional matters that have not resulted in testimony. In addition to serving as an expert, Ms. Williams has managed litigation support projects including fact-based analyses of underlying case facts, chronologies of relevant regulatory history, comparative analyses of other enforcement actions, development of case settlement proposals, and development of case settlement strategies.

### **Environmental Performance Assessment and Improvement**

Ms. Williams has performed over 50 environmental, health, and safety management system projects in virtually every industrial sector as well as in public sector agencies. These projects have evaluated the ability of existing systems to achieve EHS performance objectives, have enhanced existing systems, and have also built systems or system segments from the ground up. Areas of focus include effective translation of complex EHS requirements into job-based specifications, management commitment and leadership, performance metrics, performance verification, management of change, accountability, job-based training, effective communication, organizational structure and resources, materials management, and contractor/vendor management. Ms. Williams has lectured and written articles on EHS management system approaches and has provided expert testimony on EHS management system issues.

### **Strategic Environmental Counseling and Policy Support**

Ms. Williams has performed numerous consulting engagements designed to address specific complex compliance, permitting, and remedial challenges including strategies for interacting with government entities. She has also performed environmental policy support to clients in the areas of impact analysis of upcoming environmental regulation and legislation, assessment and integration of acquisitions, closure or divestiture of facilities, facility siting, regulatory and legislative strategy to achieve business objectives, benchmarking of industry practices, and enforcement settlement strategy.

### **Environmental Business Risk/Opportunity Evaluation and Mitigation**

Ms. Williams has performed environmental business risk assessments for corporations on individual facilities/businesses and individual product lines. These assessments identify environmental vulnerabilities that can impact business objectives including the ability to run the business as it is currently run, expand it according to planned expansion strategy, and stay competitive within the industry over time. These assessments can also identify business opportunities. Projects not only identify the business risks/opportunities along with their sources but also frame the potential size, timing, and probability associated with the risks/opportunities as well as implementation recommendations. In addition, Ms. Williams has performed projects, which develop internal processes for companies to identify environmental business risks on an ongoing basis.

### **CORPORATE EXPERIENCE (1988-1998)**

- BROWNING-FERRIS INDUSTRIES, INC., 1988-1991

#### Divisional Vice President

Environmental Policy and Planning, BFI (1988-1991)

- As Chair of Environmental Policy Committee for the second largest waste management company in the world, with \$3 billion in annual revenues, built environmental management framework, developed environmental policies for operating subsidiaries and communicated company environmental accomplishments.

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- Crafted major market development strategies by analyzing and forecasting environmental trends, e.g., landfill markets in the 1990s, oil and gas waste management markets and California recycling markets and composting markets.
- Helped operating managers resolve environmental conflicts arising in permit hearings, siting decisions, regulatory interpretations and enforcement actions.
- Established proactive environmental regulatory and legislative program, saving substantial resources and allowing company to advance legislation or regulatory change on critically important issues such as interstate movement of waste, rate regulation, solid waste planning and disposal fees.

Vice President

Environmental and Regulatory Affairs, CECOS International, BFI Subsidiary (1988-1989)

- Developed zero defect environmental plan for 14 hazardous waste operating sites.
- Managed all aspects of compliance, audit, permitting, and remedial program.

Project Director

Los Angeles, Recycling Program, BFI (1990-1991)

- Designed program to expand BFI's recycling operations in the Los Angeles market.
- Employed inventive approaches to develop local markets, such as first-of-its-kind conference on "Recycling and Minority Business."

▪ SAFETY-KLEEN CORPORATION, 1995-1998

Board of Directors

- Provided oversight on corporate government and strategic direction.
- Chaired environmental committee of the Board.

*GOVERNMENT EXPERIENCE - U.S. Environmental Protection Agency (1970-1988)*

Director

Office of Solid Waste (September 1985 to February 1988)

- Directed 250 person, \$40 million annual program to implement the 1984 Hazardous and Solid Waste Amendments, which required issuing over 70 new, controversial rules in three years. *Received EPA's distinguished career award.*
- Regularly represented EPA before Congress, states and trade associations as well as to senior government officials in Japan, Australia and India.

Deputy Assistant Administrator

Office of Pesticides and Toxic Substances (December 1983 to September 1985)

- Managed day-to-day operations of OPTS, a 1,400+ person organization responsible for regulating pesticide and chemical use. Received President's Meritorious Rank Award for significant improvements in the office's workings.
- Led U.S. delegation on international chemical activities for more than three years.

Deputy Director and Acting Director

Office of Toxic Substances (January 1981 to December 1983)

- Managed 400-person office responsible for new and existing chemical reviews (including regulations on PCBs and asbestos under Toxic Substances Control Act. Received William A. Jump Award for Excellence in Public Administration.
- Chaired U.S. delegation to OECD Chemicals Group.

Director, Special Pesticide Review Division

Office of Pesticides (April 1979 to January 1981)

- Developed major agency actions to cancel or restrict pesticides such as EDB, toxaphene, lindane and wood preservatives. Crafted the process for re-registering all pesticides.

Branch Chief, Statistical Evaluation Staff

Office of Planning and Evaluation (March 1978 to April 1979)

- Built from scratch the first high-level, centralized statistical evaluation office in EPA, which became instrumental in reviewing all major agency regulations for data quality.

Branch Chief

Office of Mobile Source Air Pollution Control (September 1972 to March 1978)

- Supervised Inspection/Maintenance program and development of test procedures and emission factors for light and heavy-duty vehicles, including fuel economy driving test. Awarded EPA Bronze Medal.

Mathematician

Office of Research and Development (September 1970 to September 1972)

- Performed statistical analyses and mathematical modeling to support ambient air quality standards.

**OTHER RELEVANT EXPERIENCE**

- Member, Relative Risk Reduction Strategies Committee, Science Advisory Board, U.S. Environmental Protection Agency (1989-1990).
- Consultant to USEPA Science Advisory Board (1995-1998)
- Member, Science and Technology Research Priorities for Waste Management in California, prepared for California Integrated Waste Management Board (1992).
- Participant, Landfill Capacity and Siting Issues in California, California Integrated Waste Management Board (1994).
- Member, National Academy of Sciences Subcommittees on hazardous waste, hazardous materials, and groundwater contamination (1992-1998)
- Testimony before the US Congress on 12 occasions from 1983-1995.
- EPA's National Advisory Committee for Policy and Technology, Subgroups on Wastes and Chemicals (1993-1996)

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## PUBLICATIONS

- "Integrated Municipal Solid Waste Management," *Handbook of Solid Waste Management*, McGraw-Hill (1994).
- "Landfills: Old Remedy with New Challenges," *Forum for Applied Research and Public Policy* (Spring 1992).
- "Why-and How to-Benchmark for Environmental Excellence," *Total Quality Environmental Management* (Winter 1992/93).
- "Strategies for Managing Present and Future Waste," presented in *Risk Analysis* (1991).
- "Rethinking RCRA for the 1990's," *Environmental Law Reporter* (February 1991) 10,068–10,075.
- "Using Cross-functional Teams to Integrate Environmental Issues into Corporate Decisions," Proceedings of January 1991 Corporate Quality/Environmental Management Conference.
- "Environmental Protection Agency Actions to Stimulate Use of Biotechnology for Pollution Control and Cleanup," *Environmental Biotechnology: Reducing Risks from Environmental Chemicals Through Biotechnology*, edited by G. Omenn (Plenum Press, 1988), 373–380.
- "Policy Improvements to Encourage Soil and Groundwater Remediation," *Groundwater and Soil Contamination Remediation: Toward Compatible Science, Policy and Public Perception*, Report on a Colloquium Sponsored by the National Research Council Water Science and Technology Board (1990) 195–205.

## EDUCATION

B.S., Math and Physics, *Summa Cum Laude*, Phi Beta Kappa, DICKINSON COLLEGE, 1968

Graduate Work, Math and Physics, UNIVERSITY OF MARYLAND, 1969

## EXPERT TESTIMONY (2005 – January 2009)

- USEPA Region 5 v. General Motors Automotive – North America, Docket No. RCRA-05-2004-0001
- Allgood, et al. v. General Motors Corporation, United States District Court, Southern District of Indiana, Indianapolis Division, Case No. IP02-1077-C-H/K
- King, et al. v. Hamilton Sundstrand Corporation, District Court, Adams County, Colorado, Case No. 02 CV 2018, March 31, 2006
- Drummond, et al. v. E.I. Du Pont de Nemours and Company, Circuit Court of Harrison County, West Virginia, Civil Action No. 05-C-148-1, Deposition November 27, 2006
- Perrine, et al. v. E.I. Du Pont de Nemours and Company, Circuit Court of Harrison County, West Virginia, Civil Action No. 04-C-296-2, Deposition June 5-6, 2007